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THE BANKS OF THE THAMES



THE ROYAL HOSPITAL AT GREENWICH, FROM THE RIVER.

GREENWICH.

THROUGHOUT the winding course of the Thames, and amidst the varied picturesque scenes which its banks present, there is perhaps no building exhibited to the eye of a spectator, having more majestic features than *Greenwich Hospital*. There may, perhaps, be a few of which the architectural details are of a higher order, or which are surrounded by woodland scenery, calculated to lend a charm to them; but the view of the seamen's asylum, whether we approach it from the "Pool," or from Blackwall, never fails to strike the eye as something grand and imposing. The reputation of England as a maritime nation has been not a little heightened in the estimation of foreigners, by the knowledge that such a palatial structure is appropriated to the old seamen who are no longer able to fight their country's battles.

When we stand in the central quadrangle, and look around at the four compact clusters of buildings named respectively after King Charles, King William, Queen Mary, and Queen Anne, we are reminded of the gradual steps by which, and the sovereigns by whom, the structure was brought to its present state.

In our twelfth volume we gave a brief account of the ancient palatial residence which existed at Greenwich, and which was at intervals inhabited by most of the sovereigns from Edward the First to Charles the First. About the time when the troubles of the last-named monarch commenced, the old palace was occasionally occupied by him; while on the site of the present Observatory was a sort of tower, wherein the junior branches of the royal family resided. This tower was

deemed by the parliament so important as to be taken out of the king's hands, and fortified. Soon afterwards the palace and park were awarded to the Protector Cromwell, in whose possession they remained till the restoration of Charles the Second. The whole of the palace had by this time become so greatly decayed, that this monarch resolved to pull it down, and to replace it with a more splendid structure. After expending the sum of 36,000*l.*, that portion of the present building was completed which is called King Charles's building, being the water-side wing nearest to London. Here the king occasionally resided, but no farther progress was made in the building, either by him or by his successor.

At length, in the reign of William and Mary, the queen, struck with the forlorn condition of the poor old seamen who were no longer equal to the duties of maritime life, proposed to the king that the palace at Greenwich should be enlarged, and appropriated as a hospital and asylum for superannuated seamen. Sir Christopher Wren offered his gratuitous services, as an architect, and other parties interested themselves so earnestly in the plan, that a formal grant was made by the king in 1695. This grant opens as follows:—

Whereas it is our royal intent and purpose to erect and found an hospital within our manor of East Greenwich in our county of Kent for the relief and support of seamen serving on board the ships and vessels belonging to the navy royal of us, our heirs, or successors, or employed in our or their service at sea, who by reason of age, wounds, or other disabilities, shall be incapable of further service at sea, and be unable to maintain themselves, and for the sustentation

of the widows, and the maintenance and education of the children of seamen, and improvement of navigation.

The ground and buildings were invested in the hands of certain trustees, who were empowered to work out the benevolent intentions of the king and queen. After examining the unfinished palace, and the ground adjoining, the trustees came to a resolution that another wing, similar to the former, and like it approaching near to the river, would enable them to accommodate three or four hundred children. The buildings were speedily commenced, and by 1698, Sir Christopher Wren had nearly finished the present western wing. Visitors to Greenwich are probably aware that an open avenue exists from east to west through the entire range, having masses of building on either side, and we may here remark that the buildings hitherto spoken of are wholly between that avenue and the river. The buildings further inland, or towards the park, were of subsequent foundation, and arose out of a proposition by Sir Christopher Wren to construct a dining-hall (now the Painted Hall), southward of King Charles's building. This proposition was at once acceded to. Year after year, as increased revenues were placed at the disposal of the trustees, new portions of building were erected; until at length the four magnificent piles of buildings now presented were finished.

As to the funds whereby these costly erections were enabled to be finished, a few words must be said. Perhaps no other public establishment has derived its revenues from so many different sources as Greenwich Hospital. They comprise the following:—A grant of 2000*l.* per annum from King William; a subscription of 8000*l.* raised at the commencement of the work by the original commissioners; a grant of various fines levied on merchants for smuggling; the forfeited effects of Kid, a pirate, granted by Queen Anne, in 1705; the moiety of an estate bequeathed by Robert Osbaldiston, Esq., in 1707, amounting to 20,000*l.*, with the profits of his unexpired grant of the North and South Foreland Lighthouses; an estate devised by Mr. William Clapham of Eltham; the forfeited estates of the Earl of Derwentwater, who joined the Pretender; a donation of 1000*l.* from an unknown benefactor, two legacies of 2000*l.* and 3800*l.*; fines for fishing with unlawful nets, and for other offences in the River Thames; a per centage on freights; the profits of the market of Greenwich; and a sum of 20,000*l.* per annum from a contribution of sixpence per month from every seaman in the merchant service. From these diversified sources the large revenue of 130,000*l.* per annum is derived by the hospital.

The government of the hospital has been altered at different times, according to the exigencies or prospects of the institution. George the Third, by charter, incorporated the commissioners, in whom also were vested, by Act of Parliament, all the estates held in trust for the benefit of the hospital. George the Fourth placed the institution under the control of the Board of Admiralty; an arrangement which, we believe, still exists. The principal officers of the hospital are, a governor, lieutenant-governor, five captains, eight lieutenants, two chaplains, physician, surgeon, three assistant surgeons, dispenser, two assistant dispensers, secretary, cashier, steward, clerk of the cheque, and clerk of the works. With respect to the number of inmates, this, as well as the extent of the buildings, has increased with the funds of the institution. On the opening of the hospital in 1705, fifty-two pensioners were admitted; in the following three years the number increased to three hundred; and, progressively increasing with the means afforded, the number amounted in 1738 to about a thousand. By degrees this number has increased to more than two thousand seven hundred. There are three matrons, a hundred and sixty nurses, and attendants of other kinds, increasing the number of persons living within the hos-

pital to nearly three thousand five hundred. At first the hospital was intended only for seamen of the royal navy; but in 1710 the privileges were extended to disabled mariners of the merchant-service, under certain limitations.

Let us now glance at some of the details of this noble institution. On approaching the buildings from the river, we see a terrace (its length is more than eight hundred feet), terminating at each extremity in an alcove. In the centre of the terrace is a landing-place from the river, from which we obtain an uninterrupted view of the ranges of buildings on either side, bounded in the distance by the Royal Naval School, and still farther by the Royal Observatory on the summit of the hill in the park. A noble esplanade, nearly three hundred feet wide, separates the eastern from the western wings; the centre of the esplanade being adorned with a statue of George the Second, by Rysback. On the right hand, as we view the hospital from the river, is King Charles's building, built from the designs of Inigo Jones; all the four fronts of which present elaborate specimens of decorative architecture. This building contains the apartments of the governor, the lieutenant-governor, the governor's hall, the council-chamber, and other offices; with wards for nearly five hundred pensioners.

The wards here spoken of are named after celebrated ships, a system as appropriate, perhaps as any that could be adopted. They consist of large airy rooms, on either side of which are little cabins, or bed-rooms, one for each man. Most of the cabins have some little decorative appendage indicative of the tastes or recollections of the old weather-beaten seaman who inhabits it. In one will be seen an open Bible; in another, an amusing book; in a third, a sea-song, tacked against the wall; and in others, such little knick-knacks as the rules of the institution allow the men to retain.

Queen Anne's building forms the left wing as seen from the river, and resembles the other in almost every particular. Those who had the erection of this part of the building wisely resolved to follow the design of Inigo Jones, instead of forming plans of their own. This range, in addition to offices of the establishment, contains wards for four or five hundred pensioners.

Behind the fine esplanade a double flight of stone steps leads up to an inner court or green, bounded on the west by King William's building, and on the east by Queen Mary's building; both of which are divided by a narrow avenue from the buildings just described. The two domes which form such conspicuous objects from the river, are situated, one in King William's building, and belonging to the Painted Hall, and the other in Queen Mary's building, in connection with the chapel. This chapel suffered greatly by fire in 1779, but it was restored in the Grecian style of architecture, from a design by Mr. Stuart. In the vestibule of the chapel are statues of Faith, Hope, Meekness, and Charity, after designs by West. A flight of fourteen steps leads through folding doors of carved mahogany, with an architrave, frieze, and cornice of statuary marble, into the chapel, which is lighted by two ranges of windows; between which are galleries for the governor, lieutenant-governor, and principal officers; while the lower part is provided with seats for a thousand pensioners, and others for the nurses, inferior officers, and attendants. The altar-piece is embellished with a painting of the shipwreck of St. Paul, by West; above which are figures of angels, sculptured in marble by Bacon. Round the upper part of the chapel is painted a series of subjects from the life of Our Saviour. Besides the chapel, and contiguous to it on the south, Queen Mary's building contains wards for considerably more than a thousand pensioners; being much more extensive than any of the other ranges.

King William's building contains the celebrated Painted Hall—one of the chief attractions of the hospital to a

casual visitor. This hall consists of a vestibule, a portal, a saloon, and an inner saloon, all profusely painted and decorated with pictures, statues, and models. The dome of the vestibule (forming the right-hand dome as seen from the river) is painted with various nautical emblems. The ceiling contains portraits of King William and Queen Mary, surrounded by various emblematical figures. The two royal figures, together with emblematical representations of Prudence, Temperance, Fortitude, and Justice, are inclosed in an oval frame or border in the centre of the ceiling; and around it are maritime emblems, such as anchors, cables, rudders, masts, sails, blocks, guns, boats, oars, flags, &c. Between the wall and the ceiling are other emblematical figures. The ceiling of the inner saloon, or "upper hall," as it is sometimes called, is painted in a similar manner; Queen Anne and Prince George of Denmark being represented surrounded by the Virtues, the four Quarters of the Globe, &c. For the whole of these paintings, the artist, Sir James Thornhill, received 6685*l.*; being at the rate of 3*l.* per square yard for the ceiling, &c., 1*l.* per square yard for the sides. Sir James sent a memorial to the commissioners, wherein he complained that he had not received a rate of remuneration equal to what had been customarily given in similar cases. He stated that Rubens received 4000*l.* for painting the ceiling of Whitehall Banqueting-house, which gave a rate of 10*l.* per square yard; that the Duke of Montague had given 7*l.* 10*s.* per yard to Rosso, for painting his saloon; that Signor Varrio received 3*l.* 15*s.* per square yard for paintings at Hampton Court and Windsor Castle, and "had wine allowed him, lodgings in the palaces, and when his eyesight failed him, a pension of 200*l.* per annum, and allowance of wine for his life." How strangely does this mode of estimating the work of the pencil by the square yard sound to our ears! There is a small picture by Correggio, in the National Gallery, which, if its size be taken with the price paid for it, might be said to be worth nearly thirty thousand pounds "per square yard."

The great hall was originally employed as the Refectory or dining-room of the whole establishment; the inner chamber or saloon being appropriated to the officers, and the larger saloon to the pensioners. But when the growing revenue of the institution gradually led to an increase of the numbers of inmates, the space proved inadequate to their accommodation, and other arrangements were made. The great hall, thus deserted, continued to be unoccupied for nearly a century, when, in the year 1794, Lieutenant-Governor Locker suggested that it should be appropriated to the service of a national gallery of marine paintings, to commemorate the eminent services of the royal navy of England.

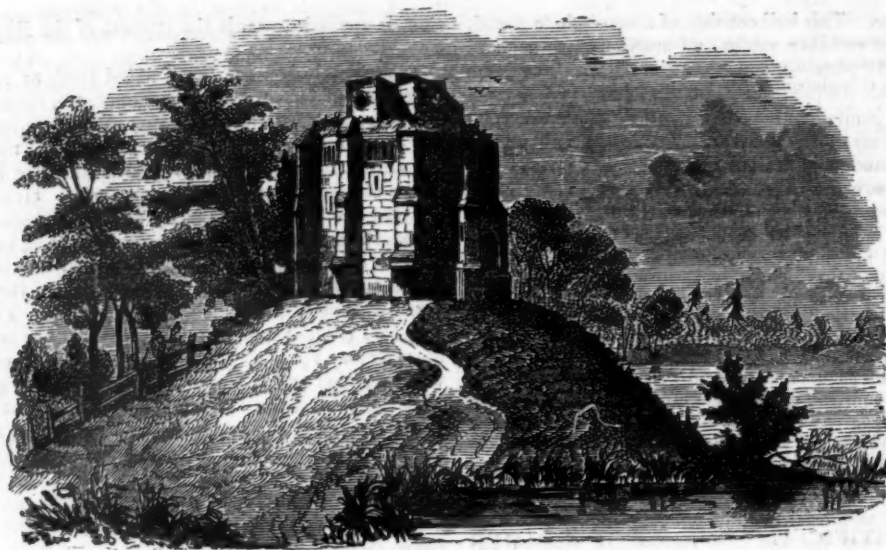
The design was not acted on at that time; but in the year 1823, George IV. commenced the formation of such a collection by presenting to the Hospital such pictures from the royal palaces as related to the naval exploits of England. His successor on the throne, and noblemen and gentlemen in different parts of England, entered so heartily into the plan, that in a few years the pictures forming the presented collection were assembled and placed in the Hall. They comprise chiefly portraits of celebrated naval commanders, and representations of famed naval encounters. Howe's victory over the French off Ushant; the defeat of the Spanish Armada; the bombardment of Algiers; Sir George Rooke's victory at La Hogue; Sir Edward Hawke's victory at Quiberon; Sir Samuel Hood's engagement; Death of Captain Cook; Death of Nelson—these are some of the subjects of the pictures; while portraits, large or small, are preserved of nearly all the celebrated admirals of England. Besides these there are statues of Nelson, Duncan, Howe, and St. Vincent; flags taken by those admirals in battle; and models of celebrated ships. Altogether this forms a gratifying and honourable exhibition of England's naval greatness. A small fee payable at the doors for admis-

sion, is applied towards the support of the Royal Naval School.

Immediately beneath the Painted Hall, as also in the lower part of Queen Mary's range, are the rooms wherein the pensioners have their meals. Whoever has crossed the open quadrangle of the Hospital at meal-times, can hardly fail to have been struck with the busy hum of the old pensioners in their refectories. Here, a stranger may see the veterans enjoying their substantial fare, —some arm-less, some eye-less, others having two stumps instead of legs, some talking over their lost battles, or repenting, perhaps for the hundredth time, the "tough yarn" so thoroughly relished by a mariner. The visitor may also (bare-headed, for this is part of the etiquette of the refectory,) pass through the room, and glance into the well-arranged and scrupulously-clean kitchen beyond.

Besides the four clusters of buildings which have so long occupied our attention, there is, towards the west, a separate building, appropriated as an Infirmary. It is a handsome modern quadrangular brick structure, containing apartments for a physician, surgeon, and apothecary, with their assistants; a surgery, a dispensary, a small chapel, and wards divided into well-ventilated rooms, for the reception of two hundred and fifty patients, four in each room. Adjoining the infirmary is a building for the accommodation of above a hundred helpless pensioners, together with rooms for the nurses, hot and cold baths, &c.

In looking down from the summit of Greenwich Hill towards the hospital, the eye rests upon a low but extensive range intervening between the hill and the hospital. This is the Royal Naval School, once partly occupied as a residence by Henrietta Maria, queen of Charles the Second. The building consists of a centre and two wings; the former occupied as residences by the superintendent, the chaplain, the head master, the assistant masters, the matron, nurses, and other persons; and until lately, as school-rooms, refectory, and dormitory for girls. The west wing contains a chapel, together with the school-room and dormitories for the "upper school;" this upper school consists of about one hundred sons of commissioned and ward-room warrant officers, nominated by the Board of Admiralty, and three hundred other boys, also the sons of officers, nominated by other parties. The east wing contains the refectory, washing-rooms, kitchen, brewhouse, and bakehouse for the whole establishment, as well as the school-room and dormitories for the "lower-school;" this lower school consists of four hundred boys, sons of inferior warrant and non-commissioned officers and seamen. The lower-school also had, until lately, another attached to it for girls, daughters of the same class of persons as those just named. The institution is supported by ample funds, and purports to maintain, clothe, educate, and apprentice, the thousand children kept there; the boys being apprenticed to the sea-service, (the "upper class" having received a better education than the "lower,") and the girls to domestic service. About two years ago, however, in consequence of a representation from the governor of Greenwich Hospital, the Board of Admiralty, in conjunction with the Committee of Council on Education, made a searching inquiry into the mode of conducting the Naval School; the result of which was, that the necessity of removing the girls' school altogether became very apparent, as well as the adoption of improved methods of education and discipline throughout all the departments. These changes are now being gradually made; and the school bids fair to be ultimately what it is eminently calculated to be—a source from whence youths, well fitted for the naval service, may be derived.



Chappell of "Our Ladye," on the Red Mount,

AT KING'S LYNN, NORFOLK

AMONG the numerous monuments of the architectural skill and religious zeal of our ancestors, few, equally deserving of notice, have been so generally overlooked as this elegant and very singular little building. To those who have only viewed it externally, the former epithet may perhaps appear inappropriate; but such as possess any degree of zealous partiality for the beauties of English architecture, in its best style, can never contemplate the interior of this chapel without surprise and admiration. If other buildings attract attention by their magnitude, this deserves it for its peculiar smallness. It is so well proportioned, yet so extremely diminutive, that it seems like a beautiful model for a much larger edifice. The extreme length of the chapel within is only seventeen feet, and the width, or transept, is only fourteen feet; and the perfect form of the cross is preserved, although it stands within an octagonal wall. The common appellation of this building, Red Mount, is manifestly derived from the outer walls of it being of red brick. They form an irregular octagon, about twenty-six feet in diameter, with buttresses at the angles, faced with stone. Within the walls, a space is left sufficient for a passage round, and in the centre is a substantial pile of masonry, containing two vaulted apartments or stories, beneath the chapel itself, which were approached by staircases from a door in the north-east side. The lower one, which was lately used as a stable, is about fifteen feet long, by twelve wide, and from the original floor it was sixteen feet high. It had a window to the east since converted into a door; and a fire-place on the south now nearly covered with rubbish. There is also a doorway, with an obtusely pointed arch, and carved soffit, leading from this room through an arched passage, below the surface of the mount towards the west. This might originally have been another entrance, but there is at present no trace of it on the outside. This apartment was probably a kitchen, or a refectory; but the fire-place does not appear to have had any chimney. The vaulted chamber on the next floor is only twelve feet and a half long, from north to south, by eight in width, and not quite eight feet high in the middle. It has no window, but has a small flue for a fire-place in the south-west angle. This might have served as a dormitory, and there is room for a small cell or two in the void spaces on each side. The principal entrance was from the west, whence a staircase of brick ascended on the south side of the building, leading to the chapel above. Here a very singular contrivance is observable; every worshipper was

obliged to make a complete circuit of the chapel before he entered it, for the stairs conducted him immediately under, and as it were through, the high altar, then by a well-lighted gallery, on the north side, till he came to the west door, which is directly over that by which he first entered.*

AN INSCRIPTION FOR "OUR LADYE'S CHAPPELL.

BY DR. AYRE.

STRANGER!—Upon this grassy mount you view
Our Ladye's Chappell, which for ages drew
Its crowd of pilgrim-worshippers, as they,
Wending with fainting step their weary way
To Walsingham afar, at evening's close,
Crossed its lone porch to seek therein repose;
And, from their brief repast, devout repair
To its loved shrine, to weep and worship there!

It was of passing beauty, and its fame
Brought the rich Palmer, who, with offerings, came
To swell its golden store. And thus it long
Had flourished,—and still passed the pilgrim throng,
Counting, at times, within their peaceful train,
Princes who, recreant, knew no peace again!
When lo! its days were numbered, and the light
Of heavenly truth arose upon its night
Of dark and pageant worship, and disclosed
Th' unholy homage, which its rites imposed;—
And then, elect, stood Luther forth to lead
The array of millions challenging its creed;
While sceptered spoilers, with their nobles came,
To share its wealth, and leave it but a name!

And now, with altar swept in wrath away,
And hands profane long lent to its decay,—
Without a record left to tell us when
It first arose, or first its fall began,
Behold it still endures—a cherished thing
Of olden time,—whose walls, the hallow'd spring
Of holiest musings, o'er the spirit cast
Their mystic spell to summon back the past,
And, faithful to its glance, before it raise,
In graphic truth, the scenes of by-gone days!
Nor may we now, in bitterness, deride
The faith our fathers followed as their guide,
Or scorn them kneeling at its shrine of yore,
To flee from sin, and feel its sting no more;
But as, repentant, here they trembling fled
To seek for mercy with what light they had;
So may we now indulge the cheering thought,
That here they found the mercy which they sought.

And if, oh! stranger, you, by guilt oppressed,
And wandering hither, seek in vain for rest;—

* From BRITTON'S *Architectural Antiquities*, Vol. III. By the Rev. Edward Edwards, M.A.

Unlike your fathers, who would here resort,
To plead for pardon with the gold they brought,
Here seek of HIM,—with confidence more just—
Of HIM alone, in whom alone is trust !
And as this globe itself to man was given,
A temple meet, wherein to worship Heaven,
Here, mid the sylvan shade and green array,
Which gird these walls, and grace their slow decay,
Here bow the head—here lift the heart, in prayer
To HIM, who owns but One great offering here !
And as you thus obey the heavenly call,
To flee to HIM, who lives to pardon all,
Unmov'd you will this mouldering Ruin view,
Nor mourn that you, ere long, must perish too ;
But look exulting to that hour sublime,
When you shall triumph o'er these spoils of Time.
When you, immortal,—freed from mortal clay,
Shall wipe its tears of pain and grief away ;
Clasp in a fond embrace, to part no more,
The friends you lov'd, and wept in life, before ;
And, 'midst the wreck of all things, glorious rise
To join earth's pilgrims gathered to the skies,
And, through all ages, throned in bliss above,
Adore JEHOVAH'S Name, and share His love !

THE ARTIFICIAL COOLING OF SUMMER BEVERAGES.

3. COOLING BY SALINE MIXTURES AND BY RAREFACTION OF THE AIR.

BESIDES the methods of producing artificial degrees of cold by *evaporation*, and *ice*, and *snow*, already described, it has been customary, not only in modern times, but also in past ages, to employ certain saline substances to produce the same effect. There is evidence that the ancients employed some kind of salts to aid in producing the cooling effect of snow; but it is not clearly known what salts these were, and we shall therefore proceed to more modern times.

In the first half of the sixteenth century, it was ascertained that liquors might be cooled by placing the recipient vessels in water wherein saltpetre had been dissolved: and some time afterwards it was found that other salts possessed a similar property. It is said that, by about the year 1550, all the water, as well as the wine, drunk at the tables of the great and rich families at Rome, were cooled by the use of saltpetre. Blasius Villafranca, a Spaniard, who practised physic at Rome, and who attended many of the nobility, published in the year just mentioned, an essay, in which he declared himself to have been the person who made known this property of saltpetre; and he states the idea to have been suggested to him by the circumstance that in summer salt water is colder than fresh. He explains the method of effecting the refrigeration, thus: the liquor must be put into a bottle, or globular vessel with a long neck, that it may be held with more convenience; this vessel must be immersed in another wide one filled with cold water; saltpetre must then be thrown into the water gradually, and while it is dissolving, the bottle must be moved round with a quick motion. Nicolaus Monardes, a Spanish physician, who died about the year 1578, mentions a similar use of saltpetre; it was invented, according to his statement, by some galley-slaves, but he condemns it as prejudicial to health. Bartholomæus Ambrosianis, in the year 1648, speaks of the cooling of liquors by common salt; and relates that it was usual in countries where fresh water was scarce, to make deep pits in the earth, to throw rock-salt into them; and to place in them vessels filled with water, in order that the latter might be cooled. The Jesuit Cabeus wrote a treatise in 1644, in which he informs us that with thirty-five pounds of saltpetre, we can not only cool a hundred pounds of water, by quickly stirring it, but convert it also into solid ice; an assertion for the truth of which he refers to an experiment made by him. It has been since supposed, however, that Cabeus mistook the crystals of saltpetre for ice.

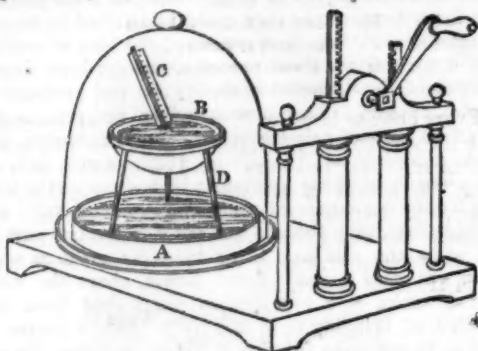
A marked increase in the refrigerating power of saline substances was obtained when the discovery was made that snow, added to various salts, sank the mixture to a lower temperature than could be attained by the use of salts alone. Who first conceived the idea of making such a mixture for these purposes, has not been clearly ascertained; but Tancredus, a physician and professor at Naples, appears to have first described the process and its effects distinctly, in the year 1607. Sanctorius, in a work published at Venice, in 1626, states that, in the presence of many spectators he had converted wine into ice, by a mixture of snow and common salt; and he adds that when the salt was equal to a third part of the snow, the cold was three times as great as when snow was used alone. Lord Bacon, about the same period, spoke of a new method which had been discovered, of bringing snow and ice to such a degree of cold as to cause the freezing of water; and that this was effected by means of salt. Boyle, who died in 1691, made experiments with various kinds of salts, and he describes how, by means of salt, a piece of ice may be frozen to another solid body. Descartes says that this was in his time a well-known phenomenon. About the same period, Barclay speaks of the following contrivance:—two cups made of copper were placed one within the other, so as to leave between them a small space, which was filled with water; the cups were then put into a pail, amidst a mixture of snow and unpurified salt, coarsely pounded; and the water in the space of three hours was converted into a cup of solid ice, "as well formed as if it had come from the hands of a pewterer."

Within the present century many experiments have been made on the frigorific power of various mixtures, the substances employed being snow, powdered ice, common salt, nitrate of potash, and various others. The general character of such mixtures, and the mode in which their peculiar effects are produced, are thus described in Sir John Leslie's *Treatise on Cold*. (*Encyclopædia Britannica*.)

The solution of salts in water, by expanding that liquid, augments its capacity for heat, and consequently depresses its temperature. This effect is likewise the greater in proportion to the quantity of saline matter which can be dissolved. But after water is saturated with one species of salt, it can still absorb some portion of another. Hence the frigorific effects of solution are always increased by employing a compound of dry powder. Nitre and sal-ammoniac, or the nitrate of potash and the muriate of soda, in equal parts, added in the form of a dry powder to three parts by weight of water, will sink Fahrenheit's thermometer forty degrees. But equal parts of the muriate ammonia and of the nitrate of potash, with one part and a half of the sulphate of soda, or common Glauber's salt, will cool down three parts of water forty-six degrees. A still greater effect, amounting to fifty-seven degrees, is produced by dissolving equal parts of the nitrate of ammonia and of the carbonate of soda, in one part of water. The frigorific action is in general augmented by throwing the desiccated powder into dilute acid instead of water. Thus three parts of the phosphate of soda, and two parts of the nitrate of ammonia, joined to rather more than one part of weak nitric acid, will sink the thermometer seventy-one degrees.

Cooling by Rarefaction of the Air. The eminent philosopher just mentioned made some very curious experiments on the effect of rarefaction in lowering temperature. He found that from the altered capacity for heat which air presents when rarefied by the action of the air-pump, water contained within the receiver becomes lower in temperature, provided there be an absorbent present to take up the aqueous vapour, as fast as it is evolved from the water. He states that when the air has been rarefied two hundred and fifty times, the surface of the water is cooled down 120° in winter; and that if sulphuric acid be introduced within the receiver, a rarefaction of only fifty times will produce a depression of temperature equal to 80 or 100 degrees of Fahrenheit's scale.

The following figure will serve to illustrate the apparatus by which Leslie was enabled to freeze water



in summer with perfect ease, and which he thinks might be introduced with great facility into factories where steam power is available. This apparatus consisted of a flat table connected with an air-pump, having openings over which six glass receivers, similar to the one here shown, might be placed. The following details will explain how the process is conducted.

The sulphuric acid should be poured to the depth of half an inch in a broad, flat dish, A, which is covered by a receiver of a hemispherical form. The water exposed to congelation may be contained in a shallow cup, B, about half the width of the dish, and having its rim supported by a narrow porcelain ring, upheld above the surface of the acid by three slender feet, D; a small thermometer, C, may also be immersed in the water. It is of consequence that the water should be insulated as much as possible, or should only present a humid surface to the contact of the surrounding medium; for the dry sides of the cup might receive, from communication with the external air, such accessions of heat as greatly to diminish, if not to counteract, the refrigerating effects of evaporation. If the cup be formed of glass, the process of congelation may be viewed very completely; but a porous earthenware cup is best adapted for the process itself. If common water be used, it will evolve air-bubbles very copiously, as the exhaustion proceeds; in a few minutes, and long before the limit of rarefaction has been attained, the icy spiculae will shoot beautifully through the liquid mass, and form a net-like texture. As the process of congelation proceeds, a new discharge of air from the water takes place, and marks the progress of consolidation; but, after all the water has been converted into solid ice, which if the stratum of water be shallow may be effected in half an hour, the evaporation and absorption still proceed, until the ice entirely disappears.

There is a curious phenomenon often observable in this experiment, which is, that the temperature of the water falls several degrees below the freezing point, before congelation takes place; but the moment that it freezes, it rises to 32° , in consequence of the escape of the residuary latent heat.

After describing the above arrangements Leslie says:—"These plans are difficult in the execution; and though they enlarge our conception of the extent of the descending scale of heat, yet they furnish merely speculative results."

A very important practical improvement has been lately made in the process of artificial congelation. Sulphuric acid is certainly a cheap and most powerful agent of absorption; but the danger of using such a corrosive liquid, especially by unskilful persons, formed always a serious obstacle to its general adoption. Mr. Leslie had early noticed the remarkable absorbent quality of our mouldering whinstone, or porphyritic trap; and, in April, 1817, he substituted that material, grossly pounded and dried before a kitchen fire, instead of sulphuric acid, and actually froze a body of water

with great facility. This earth will attract the fiftieth part of its weight of moisture before its absorbent power is reduced to the one-half, and is hence capable of freezing the sixth-part of its weight in water. It may be repeatedly dried, and will, after each operation, act with the same energy as at first. But an absorbent still more convenient and powerful afterwards occurred to Mr. Leslie, viz., parched oatmeal. With a body of oatmeal, of a foot in diameter, and rather more than an inch deep, he froze a pound and a quarter of water, contained in an hemispherical porous cup. The meal is easily dried, and restored again to its action. In a hot climate the exposure to the sun alone might prove sufficient. By the help of this simple material, therefore, ice may easily and safely be produced in any climate, and even at sea.

A few years ago Mr. Perkins proposed to freeze water on a large scale, by the evaporation of sulphuric or pyroligneous ether, and to collect and condense, in a separate vessel, the ethereal vapour formed abundantly during the process, so that the ether might be used over and over again, with very little loss. He thought that the proprietors of this process would be able to supply the public with ice, at the low rate of one farthing per pound. The plan did not succeed, and we are not informed of the cause of failure.

The production of ice by the evaporation of ether is an interesting class experiment. A small, thin glass flask is provided, which fits tolerably close into a bell-shaped wine-glass, as shown in the figure.



A little good ether is poured into the flask, and some cold water into the wine glass, so that each may stand at the level *a*. The apparatus thus arranged, is placed under the receiver of an air-pump. While the air is being pumped out the ether will boil, that is, it will very rapidly pass off in the state of vapour. Now the vapour of ether, like that of all other liquids, requires heat for its formation, and this it takes from the surrounding bodies, and, among the rest, from the adjacent water, which soon freezes in consequence of the loss of that portion of heat which was indispensable to its fluidity, but which has been carried away and pumped out in the ethereal vapour. Thus we have the singular spectacle of two liquids in close proximity, the one boiling and the other freezing at the same instant.

Here we conclude our notice of this subject; from which it will be seen that the modes either actually adopted, or proposed on the ground of well-conducted experiments, for producing an artificial degree of coolness in liquors used as beverages, embrace a singularly wide and varied range.

LITERATURE is the fragment of fragments: the least part of which happened and has been said, has been written; of what has been written the least part has survived. . . . Several sayings of the ancients, which people are accustomed to repeat, had a totally different meaning from that which is given to them in modern times.—GÖTTE.

As Solomon says, "In the midst of laughter the heart is sorrowful," so in the midst of sorrow here, the heart may rejoice: for while it mourns, it reads, that those that mourn shall be comforted; and so while the penitent weeps with one eye, he views his deliverance with the other. But then for the external expressions and vent of sorrow, we know that there is a certain pleasure in weeping; it is the discharge of a big and swelling grief, of a full and strangling discontent; and therefore he that never had such a burthen upon his heart as to give him opportunity thus to ease it, has one pleasure in this world yet to come.—SOUTH.

HISTORICAL NOTICE OF THE National Anthem, GOD SAVE THE QUEEN.

III.

ATTEMPTS TO IMPROVE OR MODIFY THE VERSION OF THE NATIONAL ANTHEM.

It is doubtful whether any other song in the English language has undergone so many attempts at change as the National Anthem; or resisted more successfully the permanent adoption of any "improvements." Whether this be attributable to the real merit of the words, or to the circumstance that they have become too closely interwoven with English habits and customs to be superseded by others, we shall not pretend to determine; probably both are partially true.

If we take the printed copy of "God save the King" in the *Gentleman's Magazine* for 1745, as the earliest known copy manifestly identical with the present anthem, we shall find that ninety-seven years, at least, have been unable to effect any change in the version. There are, in the first, fourth, fifth, and thirteenth bars, slight deviations from what we now regard as the correct tune; but our attention is here directed to the words. In the same volume of the veteran magazine, is:—"An attempt to improve the song 'God save the King,' the former words having no merit but their loyalty." Whether this "attempt" was a successful one, the reader may judge from the following two stanzas:—

Fame, let thy trumpet sound,
Tell all the world around,
Great George is king;
Tell Rome, and France, and Spain,
Britannia scorns their chain;
All their vile arts are vain;
Great George is king.
He peace and plenty brings,
While Rome's deluded kings
Waste and destroy.
Then let his people sing,
Long live our gracious king,
From whom such blessings spring,
Freedom and joy.

In the "King's Anthem," alluded to in our last article, forming part of Mr. Hogg's *Jacobite Relics*, and of which we there gave two verses, the following stanza (the fourth) will show how the anthem was made to bear various burdens according to the politics of the period:—

God bless the happy hour!
May the Almighty power
Make all things well;
That the whole progeny,
Who are in Italy,
May soon and suddenly
Come to Whitehall.

This evidently alludes to the family of the Pretender at the time when the Court of Rome encouraged the claim of the Stuarts to the British throne.

The next song in Mr. Hogg's collection is called "Britons who dare to claim," and is adapted to the same tune. It appears to have been written about the time when the House of Hanover succeeded to the English throne. It is an inflated production, of six stanzas; and the two following verses will show how strongly the "Pretender" and the "Young Pretender" are alluded to:—

Join in the defence
Of James, our lawful prince
And native king;
Then shall true greatness shine,
Justice and mercy join,
Restored by Stuart's line,
Virtue's great spring.

Borne on the wings of Fame,
Charles's heroic name,
All his foes dread.
He'll from his father's throne
Pull the usurper down;
Glorious success shall crown
His sacred head.

Every one has heard of Marshal Wade, in connexion with the rebellion of 1745; but it is not so well known that an additional verse was tacked on to "God save the King," in honour of the marshal. As the Jacobites pressed the National Anthem into their service while opposing the new dynasty, so did the adherents of the House of Hanover employ the same weapon against the fallen House of Stuart.

Lord, grant that Marshal Wade
May by thy mighty aid,
Victory bring;
May he sedition hush,
And like a torrent rush,
Rebellious Scots to crush!
God save the king!

It is no slight proof of the estimate in which the national song was held, that each party eagerly availed themselves of it, modified with more enthusiasm than judgment, as an engine of excitement.

Some years ago the Rev. Mr. Wilkinson sent to Mr. Wix, member of a glee club, a piece of music which, if genuine, would place the probable origin of the national anthem much farther back than is generally supposed. The piece of music was said to have been found among some papers in the church chest of Gayton, in Northamptonshire. The music is in the old *square* character, used before round notes were adopted, and is without bars. The tune does not seem to bear much resemblance to the national anthem of the present day; nor are the words arranged in similar metre; but there is a style running through them which may have suggested an after production:—

God save King Henrie wheresoeuer he be,
And for Queene Elizabeth now pray wee,
And all her noble progenye:
God save the Church of Christ from any follie,
And for Queene Elizabeth now pray wee,
And her noble progenye!

The only Henry to whom this can allude, was King Henry the Seventh, by whose marriage with the Princess Elizabeth, the civil wars between the Houses of York and Lancaster were terminated. The marriage took place in 1486, and the song seems to have been written about that period.

We are informed that "God save the King" has now become an adopted national air in many parts of Germany, such as Prussia, Saxony, and Weimar. The author of the *Tour in Germany*, says, that upon the occasion of the king's paying a visit to the theatre at Berlin, when the writer was in that city, the whole immense audience burst forth in a national song beginning, *Heil dir im sieger kranz*, to the tune of "God save the King." The Austrians do not need to borrow from England in this respect, as they have the fine composition of Haydn's *Got erhalte Franz den Kaiser*, known in England as "God preserve the Emperor."

In the *Gentleman's Magazine* for 1795, is a Latin version of the National Anthem. The name of the translator is not given. Those of our readers who are acquainted with Latin, may be amused at the attempt to render into that language a song possessing such a peculiar metre.

O vivas, omnibus
Salvus ab hostibus,
Georgi, o Rex!
Tibi victoriam
Deus, et gloriam
Det, et memoriam,
Optime rex!

Hostes, o Domine,
Ut cadant omine
Horrido, da:
Præbe, cælicolens!
Deus omnipotens!
Atque omnipotens!
Auxilia.

Fiat clarissimus
Et beatissimus
Georgius rex;
Cujus judicio
Cujus auspicio
Et beneficio,
Floreant rex!

To present all the various additions made to the national anthem during the last fifty years, would far exceed our limits. On many great public events, on the accession of a new sovereign to the throne, on the escape of a sovereign from conspiracy, on public festivals, numerous additional stanzas have been appended to this most exciting and remarkable production. A few examples will suffice.

On the occasion of the French revolution, when, in 1793, every country in Europe was in commotion, the Rev. Mr. Tattersal wrote a new version of the national song, in six verses, of which we give the following two, to show the general character:—

England's staunch soldiery,
Proof against treachery,
Bravely unite;
Firm in his country's cause,
His sword each hero draws,
To guard our king and laws,
From factious might.

When insults rise to wars,
Oak-hearted British tars,
Scorn to be slaves;
Ranged in our wooden walls,
Ready when duty calls,
To send their cannon-balls
O'er ocean's waves.

The last occasion wherein Queen Charlotte appeared in public was when she visited the national schools, in 1818, when the national anthem was sung, with two additional verses in allusion to the queen herself, of which the following is one:—

Look where these little hands,
Bless with their helpless hands,
That brow serene!
Kindly approve while we
Bid their pure infancy
Lisp forth its prayer for thee,
God bless the queen.

A version of the national anthem was proposed, about twenty years ago, for the use of philanthropic societies during the time of peace. The following is one out of four verses:—

God bless our favoured land!
Firm may Great Britain stand,
Freedom's bright throne!
Knowledge diffuse around,
Error and vice confound;
May love and peace abound,
To none unknown!

The late George Colman wrote a version of this song, in which three new verses succeed that one which forms the first of the standard anthem. Of these three we present one:—

Long may war's clangor cease,
Long may the dove of peace
Here spread her wing!
Lull'd thus in sweet repose,
Oh! from domestic foes,
Oh! from black treason's blows,
Heaven guard the king.

At the time when King George the Third was suffering under his mental malady, Mr. Children, of Ton-

bridge, wrote a version, of which the following is the second stanza:—

Back to his frame and mind
Fair health and pow'rs refined
Once again bring;
To thee with streaming eye,
His trembling people fly,
Oh! hear a nation's cry:
God save the king!

The last variation from the accustomed version, which we shall here give, is the stanza written by Sheridan. It will be remembered by many, that on the occasion of King George the Third visiting Drury-lane theatre, on the 15th of May, 1800, he was shot at by a man named Hatfield. Sheridan immediately wrote an additional verse to the national anthem, which was sung by the performers before the king left the theatre:—

From every latent foe,
From the assassin's blow,
God save the king!
O'er him thine arm extend,
For Britain's sake defend
Our father, prince and friend!
God save the king!

It will thus be seen, even from the few specimens which we have been able to give, how numerous have been the endeavours to improve or modify this fine old song, either by appending additional verses to the original version, or by re-writing the whole. That none of these attempts have permanently held a place in the public mind (we may perhaps say the public ear) may be adduced as proof of merit in the established version; or, it may be, as a proof of the tenacity with which words, when wedded to a particular tune, are retained in connexion therewith.

We may remark that, from the peculiar metre of the song, a change in the first verse becomes necessary when the sovereign's name consists of more than one syllable. Whether the original song was "God save great James our king," or "Charles our king," or "George our king," the effect in the metre would be the same, because these names are all monosyllabic. But on the accession of her present Majesty to the throne, a difficulty was felt in adapting the national anthem to the occasion; and it will be observed that in the version now adopted, the name of the sovereign does not occur, the word Victoria being ill adapted to be introduced into the first, or indeed any subsequent line, without a greater change in the structure of the whole than would be willingly tolerated.

In 1559, the Duke of Finland, son of the King of Sweden, made his appearance in England to negotiate a marriage, as was supposed, between his elder brother and Elizabeth. The following account of the first interview of Cecil's emissary with the Duke is quaint, and curious as marking the worldly readiness of the age, and the exclusive devotion to herself which Elizabeth required in all her subjects.

"Syr, 1559.

"At 7 of the clocke yn the mornynge, thys day y came unto Harwyche: and at 9 of the clocke, after y had taryed together with Sir Thomas Smythe yn the Duke's hall more than half an howre, y was admytted unto the Duke's presens; who, sytting yn a chayre withowt movynge hymself, offered me hys hande,—as yt semed by the maner of the holdynge thereof, to kysse. But y that had bene otherwyse brought up then to kysse the hande of ony subject, other than of the parentage of my naturall prynce, after y had with reverens kysed myn owne hande, y joynd my hande with hys, accordyng to the maner of thys owr natyve countre."—*Life of Sir T. Gresham.*

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